The Honorable

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Vice Chairman

Outline

- NTSB Basics
- Some Major Accidents
- Some Future Concerns

What the NTSB Does

- Independent agency, investigate transportation accidents, all modes
- Determine probable cause(s) and make recommendations to prevent recurrences
- Conduct special studies and investigations
- Assist victims and their families

Independent

- 5 Members, nominated by the President, confirmed by the Senate
- Members are not investigators
- Safeguards for independence
- Conclusions from facts, not politics

Purpose

- Single focus is *SAFETY*

- Primary product:
Safety recommendations

- Acceptance rate: >80%

Some Major Accidents

- DeHavilland Comet (1954)
- Grand Canyon Collision (1956)
- TWA Flight 514 (1973)
- Pan Am Flight 103 (1988)
- TWA Flight 800 (1996)

BOAC Flight 781
South African Airways Flight 201

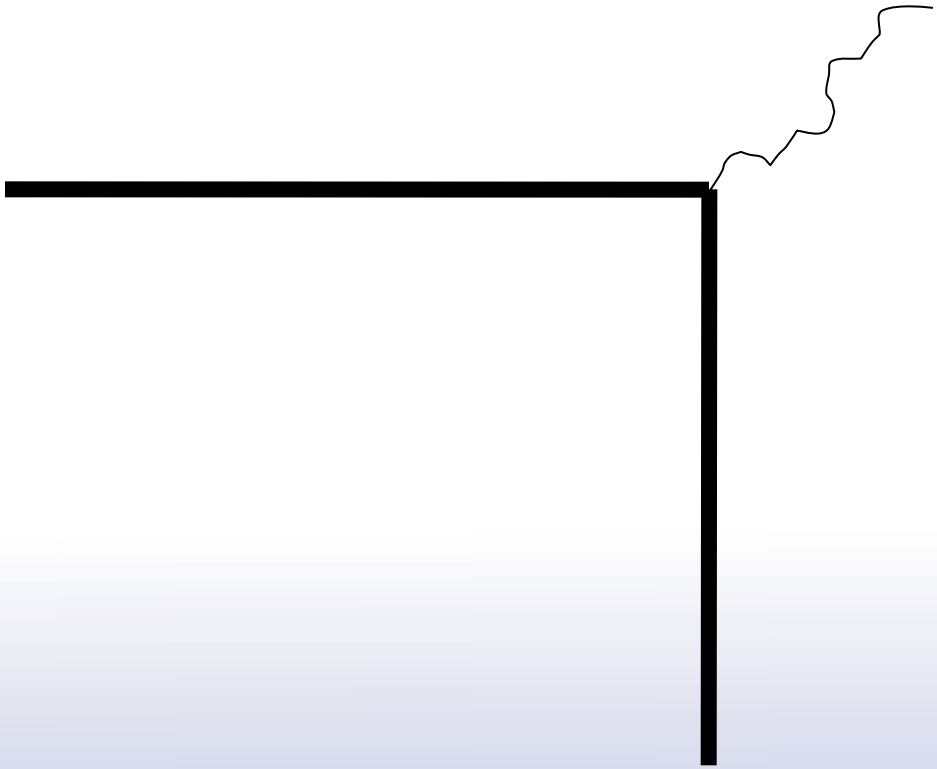
National Transportation Safety Board

DeHavilland Comet

- First commercial jet airliner
- Higher altitudes than before
- More pressurization than before
- Previous (unpressurized) planes had square corners on windows and doors

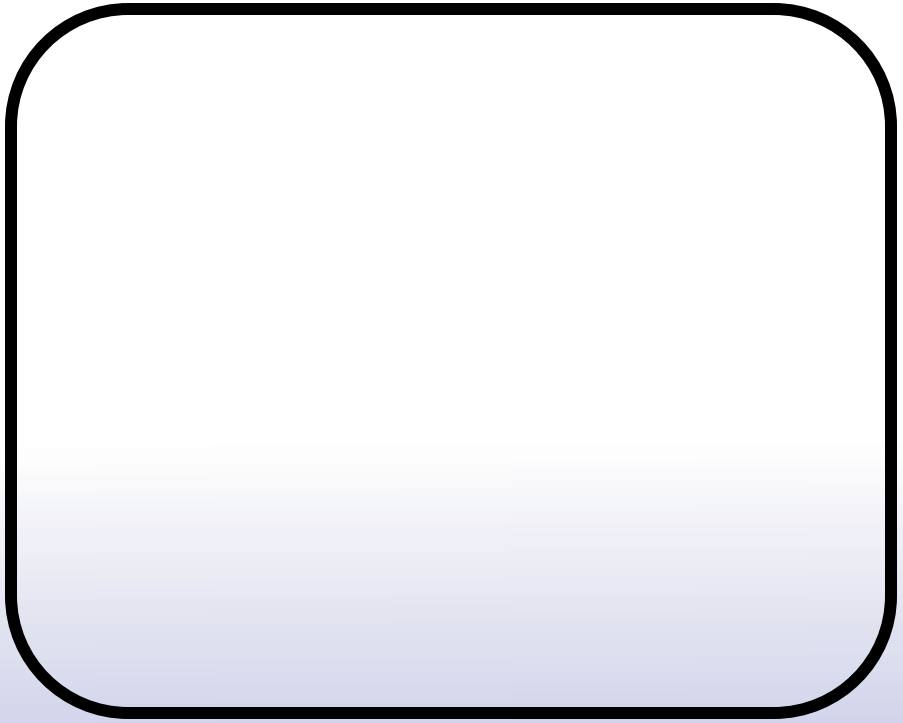
Putting Pieces Together

Extra Stress at Sharp Corners



Remedy

ROUNDED corners on windows and doors



Collision Over Grand Canyon

– Douglas DC-7, Lockheed Constellation
– About 21,000 feet

Outcomes

- Creation of Federal Aviation Administration (FAA)
- Better separation techniques
- Airliners always under “positive control”
- All aircraft over 18,000 feet under “positive control”

TWA Flight 514

- Controlled Flight Into Terrain (CFIT)
  - Approaching Dulles Airport
  - Heavy rain, strong winds from the East
  - Hills in the clouds
  - Confusing map (approach chart)
  - No electronic vertical guidance

Strong Wind Over Hill

Outcomes

- Electronic vertical guidance
- Clarified approach chart
- Pilots warned of being too low
- Controllers warned of aircraft too low
- Aviation Safety Reporting System

Pan Am 103

- Boeing 747
- London to New York
- Bomb in luggage
- Crashed near Lockerbie, Scotland

Lockerbie, Scotland

Outcomes

- Improved screening of luggage for explosives
- Stronger baggage containers
- Stronger airplanes

TWA 800

- Boeing 747, New York to Paris
- July, air conditioner running long time on ground at JFK due to delay
- Center (body) fuel tank nearly empty
- Fuel + oxygen + spark = ignition
- Shoulder launched missle?

Outcomes

- Nitrogen (rather than oxygen) to fill empty space in fuel tank
- Improved cooperation with criminal authorities

Some Future Concerns

- Pilot professionalism
- Increasing automation
- Criminalization of accidents
- Runway safety

Pilot Professionalism

Problems

- Loss of military pilot pipeline
- No filters re professionalism or judgment

Some Recent Examples

- Let's try FL 410! (2004)
- Takeoff without runway lights (2006)
- Stick shaker: PULL! (2009)
- Minneapolis over-flight (2009)

Increasing Automation

Problems

- Increasing complexity
- Improving reliability

Some Examples

- Strasbourg, France (1992)
- Cali, Colombia (1995)
- Amsterdam, Holland (2009)
- Rio to Paris (2009)

Criminalization

Problem

Possibility of criminal prosecution chills flow of proactive safety information

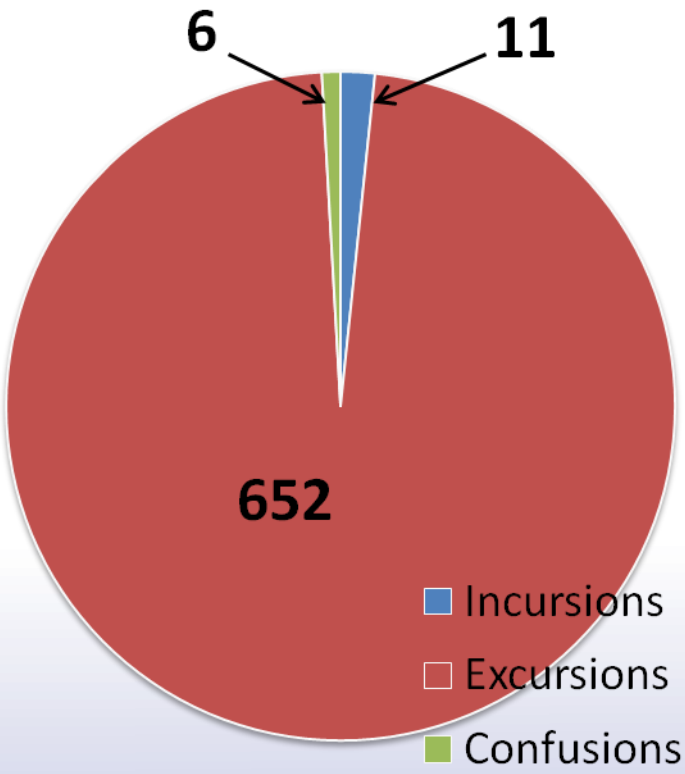
Some Recent Aviation Examples

- Concorde, Paris, France (2000)
- Linate Airport, Milan, Italy (2001)
- GOL 1907, Brazil (2006)

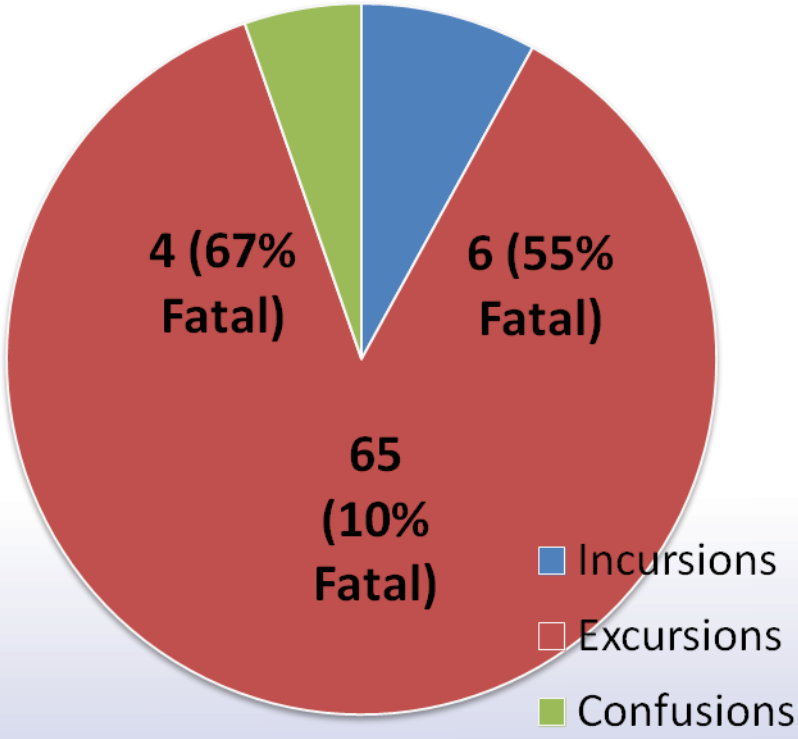
Other: Deepwater Horizon?

Runway Accidents, 1995-2010

All Runway Accidents



Fatal Runway Accidents



Note: Of 1429 accidents involving major or substantial damage from 1995-2008, 431 (30%) were runway related

The Incursion Challenge

- Tenerife runway incursion accident resulted in more fatalities (583) than any accident in aviation history
- Many more airplanes, very few new runways
- Inadequate understanding of “Why”
- Runway incursions reflect system problems that demand system solutions

Current Process

- **ATC identifies type of problem**
- **Handling of problem depends largely on ATC's identification of who made the last "mistake"**
- **If ATC says ATC made last mistake: handled by ATC**
- **If ATC says pilot made last mistake: handled by FAA Flight Standards**

Result

- **Selection bias**
- **Process was created to identify whom to punish, rather than to identify and remedy problems in the system**
- **Each person says it was other person's fault, cannot get complete picture from one person**
- **Does not result in system solutions for system problems**

Proposal: Collaboration

- **Process should not depend upon who made last mistake**
- **Bring all involved parties (pilots, controllers, vehicle drivers) together, find out what happened**
- **No enforcement action (absent criminal or intentional wrongdoing)**
- **Ascertain totality of circumstances**

Thank You

Questions?